Contaminating Food and Water Supplies

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Environmental Health Programs
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TYPES OF DISPERSAL EVENTS

There are two main modes through which radioactive materials could contaminate a food or water supply, by the **direct** or **indirect** consequence of an event. The contamination could be the **direct** consequence of intentional dispersion of radioactive material directly into a water or food supply. The second mode of contamination is the **indirect** consequence of a nuclear detonation, resulting in the creation of a cloud of radioactive material in the air. For a considerable time after the initial event, as this cloud travels, radioactive particles will "fallout" depositing on the ground and water.

CONTAMINATED WATER SUPPLY

The mechanisms of introducing a contaminant into a water supply are very similar from a direct or indirect consequence of an event. Either the material deposits on the water through the process of fallout, or is intentionally introduced into the water. The immediate threat from the deposition of radioactive materials is the integrity of the public water supply (lake, river, stream, well) for human consumption.

Sampling and analyzing water for contamination is a common practice, performed on a regular basis to assure it is safe for human consumption. Emergency teams are also trained in acquiring water samples to assess the condition of the water during emergency situations. These teams can assess whether the water source is safe to drink.

Due to the flowing nature of streams and rivers, the contaminant concentration from a one time deposition would be reduce in a relatively short period of time. Contamination in lakes and wells cannot be filtered out easily and the water source could remain unusable for a long period of time.

CONTAMINATED FOOD SUPPLY

Due to the number of different food categories, radioactive material could enter the food chain through a variety of mechanisms. The direct consequence of an intentional dispersion in a food processing or packaging facility would be very limited in affecting large populations of people, or devastating large aspects of the food chain. This type of introduction of radioactive material would not create vast devastation, but would create an isolated event. Dispersing the material via an airborne release by creating a radioactive cloud, would distribute radioactive material over a larger area, causing more concerns and affecting more food categories. An airborne type release could be the direct consequence of intentional act, like a crop duster or a large aerosol, or the indirect consequence of a nuclear detonation.

Plants

The immediate effects of an airborne type dispersion would be the deposition of contamination on vegetable gardens and fruit items. This external contamination could easily be removed by washing the item. The long term effect of this type of deposition is root uptake into the plant from either radioactive material in the soil, or irrigation with contaminated water. This contamination is incorporated into the plant and cannot be removed.

Plant items are routinely sampled and analyzed to assure they are safe for human consumption. Emergency teams are also trained in acquiring plant samples that will be analyzed and tested for contamination during emergency situations. For external contamination officials will advise the public on how to handle these items. Plants grown in contaminated soil, or with contaminated irrigation water, should not be consumed until the soil has been tested and assured to be safe. Regulators will also be monitoring the water integrity and inform the public of the acceptable uses of the water.

Animal

The internal and external contamination in plants can be transferred to animal products, such as milk, eggs and meat, through grazing. Animals grazing from contaminated areas should not be used for milk or egg production until the grazing area has been tested and deemed safe for grazing purposes. Due to the ingestion of contaminated grasses being incorporated into the animal's cells, products from animals grazing in contaminated areas should not be consumed prior to testing the meat.

During and following an emergency situation these food items would be tested and monitored, assuring they are safe for human consumption. The public will be advised of any food controls and restrictions. Subsistence hunters should contact local officials for hunting restrictions on animals that are potentially contaminated.

Aquatic

Fish residing in contaminated water can incorporate the contamination into their cells. During and following an emergency situation various fish species would be tested, assuring they are safe for human consumption. The public will be advised of any fish restrictions. Subsistence fishers should contact local officials for fishing restrictions on certain fish species that are potentially contaminated.

WHAT TO DO

- Shelter and evacuate as directed.
- Officials will advise the public on food items and water sources that are safe for consumption.
- Drink and cook with bottled water as directed.
- Purchase produce from outside of the known contaminated area, and wash all items.
- Don't drink milk obtained from goats and cows grazing in known contaminated areas.
- Subsistence hunters/ fishers should contact local officials for hunting/ fishing restrictions.

Source

Office of Radiation Protection, Washington State Department of Health

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